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June 16, 1998

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, N.W. – Room 222
Washington, D.C. 20554

EX PARTE SUBMISSION

Re: Written Presentation in CC Docket No. 97-213 and DA 98-762

Dear Ms. Salas:

Representatives of the Telecommunications Industry Association ("TIA") met with staff members of the Commission's Office of Engineering and Technology and the Wireless Telecommunications Bureau on June 2, 1998. During the meeting, TIA discussed various issues, including several potential "out-of-switch solutions" that have been mentioned to the Commission. An *Ex Parte Notice* regarding this meeting has already been submitted.

Pursuant to § 1.1206 of the Commission's Rules, 47 C.F.R. § 1.1206, enclosed please find for filing an original and two copies of TIA's response to a Commission staff request for further elaboration on some of the technical issues regarding such out-of-switch solutions.

Please do not hesitate to contact the undersigned if you have any questions.

Respectfully submitted,

Thomas M. Barba
Counsel for Telecommunications Industry Association

Enclosures

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TECHNICAL ISSUES REGARDING OUT-OF-SWITCH WIRETAP SOLUTIONS

Available information indicates that several of the proposed "out-of-switch" CALEA solutions would likely look much as depicted in the figure below (see next page). Out-of-switch vendors suggest that major changes will not need to be made in the "host" cellular system to support such solutions. However, many pieces of information required for the J-STD-025 LAESP messages reside in the cellular MSC, MSC-VLR or HLR of a typical cellular system.[1]

The Commission should consider a number of basic issues in evaluating these solutions.

- Without internal cellular system software changes, it is not known how each of the MSC, MSC-VLR and HLR will be "triggered" to send the required information to the distribution function (DF) at the appropriate time;

- Because some of the required parameters are not supported on an open interface standard, it is not known how these parameters will be passed to the DF from the cellular system without changes to open standards;

- If changes to open standards are required, it would appear that changes would also be required to the software within the cellular system;

- There is no information on the types of logical and physical connections that must be made between the cellular system and the DF;

- There is no information on the required points of interface between the cellular system and the DF;

- There is no information on the required format of the call identifying information to be delivered to the DF;

- There is no information on how the call identifying information will be provided to the DF such that the LAESP messages can be generated in "real-time";

- There is no information on how billing records would be kept so that they

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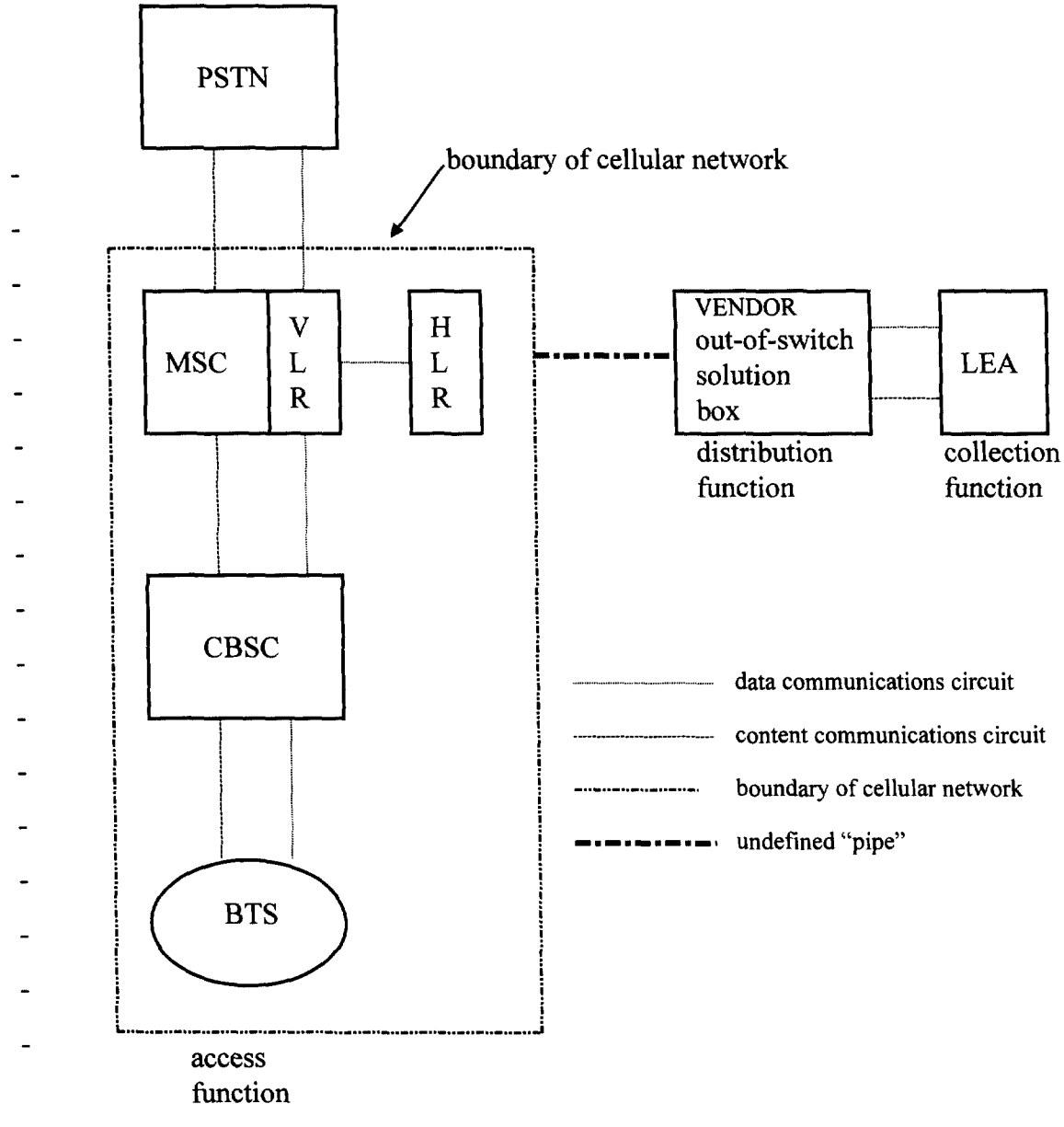
[1] Although, for explanatory purposes, this document discusses proposed out-of-switch solutions from a wireless perspective, most (if not all) of the issues identified in this document also apply to wireline systems. For example, without internal system software changes, it is equally unclear in both wireline and wireless systems how a call from an intercept subject will be identified and the required information triggered to be sent to the DF.

would not change when an intercept is effected;

- There is no information on how access to the call content will be obtained;
- There is a significant issue as to how changes in cellular architecture and feature implementation made by infrastructure manufacturers will affect these out-of-switch solutions in the future.

DETAILED REVIEW

Based upon the limited publicly available information (such as press releases and public filings), the various "out-of-switch" CALEA solutions are likely to look as depicted in the following diagram.



The "undefined 'pipe'" is the set of circuits which would connect the call content and call identifying information from the cellular system (access function per J-STD-025) to the out-of-switch distribution function (DF) box. This assumes that the distribution box will be the only distribution point for both call content and call identifying information targeted on the LEA.

The voice trunk connections between the cellular network and the PSTN are SS7 in nearly every application in America. Most cellular carriers either now support, or soon will, the IS-41 signaling protocol. This is used for both intra and inter-system data communications. For example, the data communications circuit in the figure above which connects the MSC-VLR to the HLR is almost certainly IS-41. Both SS7 and IS-41 are open industry protocols.

The available information indicates that the out-of-switch solutions would need to support all of the J- STD-025 LAESP call identifying information messages required between the DF and the collection function (LE). To support these LAESP messages various pieces of call identifying information would need to make their way from the cellular system to the DF. In many cases it is not apparent how this could take place without changes to open industry interface protocols and without software changes in one or more nodes in the cellular system. Some examples are given below.

J-STD-025 Answer message

- On any answered call attempt the Answer message must be sent to LE. Answer information is passed between the cellular network and the PSTN, typically over SS7 circuits. Within the cellular network the MSC in knowledgeable of the answer state. This information, along with other parameters such as Answering PartyIdentity, must be passed from the MSC to the DF. It would appear that new software in the MSC would be required to trigger the sending of this information to the DF.

    - There appears to be no open standard interface that supports transfer of this information from the MSC to the DF. It is not apparent how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 Change message

- The Change message notifies LE of changes in the circuit-mode identity(ies) during an intercept subject call, especially when merging or splitting calls. Information regarding this activity resides in the MSC and must be passed from the MSC to the DF. It would appear that new software in the MSC would be required to trigger the sending of this information to the DF.

- There appears to be no open standard interface that supports transfer of this information from the MSC to the DF. It is unknown how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 Origination message

- When an intercept subject initiates a call the DF must generate the Origination message to LE. Various pieces of information required for the Origination message reside in the MSC. These include calling party ID, called party ID, intercept subject location, transit carrier identity and bearer capability, all of which must be passed to the DF, from the MSC, on an origination. It would appear that new software in the MSC would be required to trigger the sending of this information to the DF.

    - There appears to be no open standard interface that supports transfer of this information from the MSC to the DF. It is unknown how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 PacketEnvelope message

- A Short Message Service (SMS) message targeted on the intercept subject will arrive at the cellular MSC. This message can be delivered to the intercept subject over the air interface using the control channel. This results in non-call state delivery to the intercept subject. This delivery will not generate the J-STD-025 TerminationAttempt message. However, J-STD-025 requires that the DF generate the PacketEnvelope message. Call identifying information regarding this SMS delivery, including the SMS "packet", must make its way from the MSC to the DF. It would appear that new code in the MSC would be needed to generate the delivery of this information from the MSC.

    - There appears to be no open standard interface that supports transfer of this information from the MSC to the DF. It is unknown how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 Redirection message

- When a call to an intercept subject is redirected to a new location, the MSC controls this activity. The redirection can include a forwarded call and a call deflected to voice mail because the intercept subject's phone is busy. Information about the redirection, which must be included in the Redirection message, resides in the MSC and must make its way to the DF. It would appear that new code in the MSC would

be needed to generate the delivery of this information from the MSC.

- There appears to be no open standard interface that supports transfer of this information from the MSC to the DF. It is unknown how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 Release

- When network resources, such as call circuits, are released, the Release message must be sent to LE. Release information is passed between the cellular network and the PSTN, typically over SS7 circuits. Within the cellular network the MSC is knowledgable of the release state. This information, along with other parameters such as location, must be passed from the MSC to the DF. It would appear that new software in the MSC would be required to trigger the sending of this information to the DF.

    - It is unknown how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 ServingSystem message

- When an intercept subject registers or deregisters in another system and notification of same comes to the system where the wiretap order is in place (the home system in this example), the inter-system interaction is with the home system's HLR. Since knowledge of the non-home system location of the intercept subject resides in the home system HLR, the HLR must get this information to the DF in some manner. It would appear that new code in the HLR would be needed to generate the delivery of this information from the MSC.

    - Support of the ServingSystem message to LE under J-STD-025 requires that the HLR deliver the registration information to the DF. This appears to require new software in the HLR. There also appears to be no open standard interface that supports transfer of this information from the HLR to the DF. It is unknown how an out-of-switch vendor could get the registration information from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 TerminationAttempt message

- When a call attempt is made to the intercept subject the DF must generate the TerminationAttempt message. Various pieces of information required for the TerminationAttempt message reside in the MSC. These include calling party identity, called party identity, and redirected-from information, all of which must be

passed to the DF, from the MSC, on a termination attempt. It would appear that new code in the MSC would be needed to generate the delivery of this information from the MSC.

- There appears to be no open standard interface that supports transfer of this information from the MSC to the DF. It is unknown how an out-of-switch vendor could get these parameters from the home system to the DF using open standards and with no software changes to any cellular network node.

J-STD-025 Location parameter

- J-STD-025 requires that intercept subject location be provided at the beginning of each call (Origination message), end of each call (Release message), at answer (Answer message) and with data exchanges (PacketEnvelope message). An origination can take place well into a call, in addition to at the beginning of a call, if the intercept subject initiates a multi-party conference call. The MSC contains the best known location of the intercept subject. This information needs to be passed from the MSC to the DF when needed for the above messages.

    - There appears to be no open standard interface that supports transfer of this information between the DF and the MSC. It is unknown how an out-of-switch vendor could get this information from the home system to the DF using open standards and with no software changes to any cellular network node.

* * *

Generally, it is also unknown how call-identifying information would be transported from the home system (e.g. the MSC) to the DF. Examples might include T1, DTMF, X.25 and TCP/IP. There is no information on the format that the call identifying information must fit to be delivered to the DF, how billing records will be kept so that there are no changes between tapped and untapped calls, and how the call identifying information would be provided to LE in "real-time".

There is also the question of call content. It is unclear how an out-of-switch vendor could gain access to call content using open standards and with no software changes to any cellular network node.

As technology advances, all manufacturers can be expected to make improvements and changes in system architecture and system features. How would out-of-switch vendors be able to modify their products to keep up with substantial architecture and feature changes introduced in the normal course of business of switch manufacturers?